JP 1994-6530 MACHINE TRANSLATION

CLAIM + DETAILED DESCRIPTION

[Claims]
[Claim 1]Face enforcing a concrete wall with a heat insulation panel, and counter with one concrete form and it is arranged, In a shuttering combination heat insulation panel which consists of thermal insulation which is used as concrete form combination and has thermal insulation or predetermined insulation efficiency made of foaming synthetic resin, A shuttering combination heat insulation panel with the water penetration engine performance which joins a reinforcing member which provides a drainage member by which a discharge slot for discharging moisture in concrete, etc. was formed in a field by the side of concrete of said thermal insulation, and by which a skin layer which opposes a drawbar pull on the surface in a hollow cross section was formed in a field by the side of anti-concrete of said thermal insulation.
[Claim 2]The shuttering combination heat insulation panel with the water penetration engine performance according to claim 1 which is the plate material which has the hollow part in which said a majority of reinforcing members were established by parallel.

[A detailed explanation of the device]
[0001]
[A technical field of a device]
This design can improve durable performance of a concrete wall by discharging moisture etc. of placed concrete, A machined surface is smooth and construction which can attach an inner package base sheet promptly is related with a shuttering combination heat insulation panel with the water penetration engine performance which can provide an easy concrete wall with a heat insulation panel.
[0002]
[A technological background of a device]
In a field of engineering works, etc., a viewpoint of durability enhancement of a concrete structure thing to a water permeable form construction method has mainly been adopted from the Showa 60(1985) cost. While holding a state with concrete fresh as a principle of this driven into shuttering, redundant water in concrete is made to discharge automatically equally from a concrete form which has the water penetration engine performance. [by air bubbles in concrete falling out, and being hard to produce a partial loss of area by remains air bubbles by this, a concrete surface's not only becoming beautiful, but, and discharging redundant water from shuttering] Since a water cement ratio of a concrete layer part decreases and a deep precise pasted layer is formed near the surface, concrete in which neither carbon dioxide gas nor salt can permeate easily from the exterior can be made, protection engine performance of an internal reinforcement can be improved, and durable performance of a concrete structure thing can be improved.
[0003]
As shuttering which has the water penetration engine performance used for such a construction method, much ostiums are drilled in a weir, textiles etc. which have filter

performance are stuck on it, and, thereby, water and air escape from and come out from concrete driven between shuttering.
[0004]
Very much, it is not restricted to engineering works but is being applied to recent years more often also in a field of construction by such construction method.
By the way, in order to heighten indoor adiabatic efficiency of a concrete building in recent years, attaching to a concrete wall, a concrete roof, etc. a heat insulation panel which consists of polystyrene foam prospers for preventing distortion of a main part by temperature difference of daytime and night in winter and summer etc.
[0005]
Although there are an inside insulation construction method which arranges a heat insulation panel to the indoor side, and an external heat insulation construction method which arranges a heat insulation panel to the outdoors side in a method of constructing this heat insulation panel in a wall etc., even if it faces adopting which method, it is constructing as follows. Many heat insulation panels were tacking made into one side of a concrete form with a nail etc., and were installed in it side by side, concrete was placed between many of these heat insulation panels installed side by side and a concrete form of another side, and a concrete form of an after-hardening couple of concrete is removed. This has attached a heat insulation panel to a concrete wall etc. at the time of placing concrete.
[0006]
In order to simplify this execution method further, a role of a concrete form is also given to a heat insulation panel, and a construction method using a heat insulation panel as concrete combination shuttering is proposed. It is not necessary to remove one shuttering after placing concrete as it is such an execution method, and there is an advantage that construction becomes simple.
[0007]
However, a thing which there is no construction method which utilized both a water permeable form construction method mentioned above and a construction method using this shuttering combination heat insulation panel, and is improved in durable performance of a concrete wall as a result, It is impossible to realize that both enforcement of a concrete wall with a heat insulation panel is simple, and it looks forward to an appearance of a construction method which can harness these both advantages in the construction industry.
[0008]
[The purpose of a device]
This design is made in view of a situation which was mentioned above, and A water permeable form construction method, Both construction methods using a shuttering combination heat insulation panel can be utilized, and improving etc. can do durable performance of a concrete wall by discharging moisture etc. of placed concrete, It is in providing a shuttering combination heat insulation panel with the water penetration engine performance which a machined surface can be smooth, can attach an inner package base sheet promptly, and can provide a concrete wall with a heat insulation panel with easy construction.
[0009]
[An outline of a device]

In order to attain this purpose, [a shuttering combination heat insulation panel with the water penetration engine performance concerning this design] Face enforcing a concrete wall with a heat insulation panel, and counter with one concrete form and it is arranged, In a shuttering combination heat insulation panel which consists of thermal insulation which is used as concrete form combination and has thermal insulation or predetermined insulation efficiency made of foaming synthetic resin, a drainage member by which a discharge slot for discharging moisture in concrete, etc. was formed in a field by the side of concrete of said thermal insulation is provided -- a reinforcing member by which a skin layer which opposes a drawbar pull on the surface was formed in a field by the side of anti-concrete of said thermal insulation in a hollow cross section is joined, and it is characterized by things.

[0010]

Since a drainage member in which a discharge slot which discharges moisture in concrete, etc. was formed was provided in a heat insulation panel according to the shuttering combination heat insulation panel with the water penetration engine performance concerning this design, If this shuttering combination heat insulation panel and a common concrete form are arranged face to face and concrete is placed, moisture in concrete before hardening through a discharge slot, etc. are removable. Therefore, a concrete wall excellent in durable performance can be provided. And since it is a shuttering combination heat insulation panel, though enforcement is simple, a concrete wall with a heat insulation panel can be provided. If it puts in another way, though both a water permeable form construction method and a construction method using a shuttering combination heat insulation panel can be utilized, and it is durable and enforcement is simple, a concrete wall with a heat insulation panel can be provided.

[0011]

If a skin layer which opposes an anti-concrete side face of thermal insulation at a drawbar pull joins a reinforcing member of hollow cross section structure formed in the surface, thermal insulation can be reinforced and modification can be prevented. That is, when a reinforcing member could raise the rigidity of a shuttering combination heat insulation panel, and it counters with this shuttering combination heat insulation panel and a common concrete form, it has arranged and concrete is placed, When thrust by prudence of concrete before concrete hardens acts on a shuttering combination heat insulation panel and a shuttering combination heat insulation panel bulges in a method of outside, When the way side skin layer will oppose this outside a shuttering combination heat insulation panel and a shuttering combination heat insulation panel is pressed by a stiffener, TATEBATA, YOKOBATA, etc. in an inner direction, The inner direction side skin layer of a shuttering combination heat insulation panel will oppose this, and a hollow part between both skin layers can also absorb modification of each skin layer, and can make it a still smoother result side. As a result, a finishing material can be promptly attached by making a reinforcing member into an inner package base sheet after hardening of concrete, and construction becomes simple.

[0012]

As for said a majority of reinforcing members, it is preferred to constitute by plate material which has the hollow part established by parallel.

[0013]

[Concrete explanation of a device]

It explains referring to Drawings hereafter per [concerning one work example of this design] shuttering combination heat insulation panel with the water penetration engine performance.

[0014]

An exploded perspective view of a shuttering combination heat insulation panel with the water penetration engine performance which requires drawing 1 for one work example of this invention, and drawing 2 are the sectional views at the time of construction at the time of building a concrete wall with a heat insulation panel using this heat insulation panel.

[0015]

As shown in drawing 1, first, [the shuttering combination heat insulation panel 1 with the water penetration engine performance concerning this example] It has the reinforcing member 4 which consists of the thermal insulation 2 which has thermal insulation or predetermined insulation efficiency made of foaming synthetic resin, the drainage member 3 provided in a field by the side of concrete of this thermal insulation 2, and plate material of a hollow structured joined by field by the side of anti-concrete of said thermal insulation 2.

[0016]

First, as the thermal insulation 1 made of foaming synthetic resin, hard foam polystyrene for example, hard foaming polyurethane, foaming polypropylene, etc. are preferred. There is thermal insulation which comprises material beyond semi- nonflammability which consists of a foaming object which uses vinyl-chloride system resin or chlorination vinyl-chloride system resin containing an inorganic filler as the main ingredients as thermal insulation which has other predetermined insulation efficiency, for example. In this case, there is an advantage of excelling not only in insulation efficiency but in fire resistance efficiency and lightweight nature. As other thermal insulation, it may be the thermal insulation formed from an acrylic resin, a vinyl chloride, phenolic resin, etc., for example. When it uses as a concrete form in short so that it may mention later, it is not limited to what it is the thermal insulation which has a certain amount of intensity, ****ed, and was mentioned above.

[0017]

Next, said drainage member 3 is the resin-molding article in which many discharge slots 5 parallel to mutual were extended to a sliding direction. What is necessary is in forming this discharge member 3, to use vinyl-chloride system resin, polycarbonate, etc. and just to form as a material, using extruder, for example. This material of construction is an example and it is not limited to these in particular about this design.

[0018]

However, preferably, since there is a possibility of entering and getting concrete blocked in the drainage gutter 5 of this drainage member 3, although it is permeable in the drainage gutter 4 of the drainage member 3, it is preferred [concrete] to form the filter member 6 (refer to drawing 2) it was made not to pass. The filter member 6 is what lets moisture and air pass from concrete in a fresh state, For example, textiles which have water permeability, a nonwoven fabric which has water permeability, a polyethylene film (for example, thing which has the porosity of 1 mm - 10 mm), and a network (what has **1mm-**10mm porosity) can be illustrated.

[0019]

In order to join this filter member 6 to the drainage member 3, when the filter members 5 are textiles, a nonwoven fabric, etc., it has joined with binders, such as an adhesive bond. In the case of the above-mentioned polyethylene film, a network, etc., the filter member 5 is joined by heat lamination etc.

[0020]

A discharge of moisture from concrete is influenced by water cement ratio of concrete. Therefore, it is necessary to define the thickness T1 of the heat insulation panel 1, the width X of the discharge slot 5, and depth D of the discharge slot 4 also corresponding to a water cement ratio. For example, in an example of an experiment which this person performed, about 1 l. of water penetration was able to be acquired by thickness T1=25mm at general 4-round compressive strength of 240 kg / cm^2.

[0021]

The discharge slot 5 may set a prescribed interval throughout a side face of the heat insulation panel 1, may be formed, or may set a prescribed interval on at least a part of side face of the heat insulation panel 1, and may be formed in it. It is good, if moisture of a complement can be discharged from concrete and insulation efficiency is not deteriorated in short.

[0022]

When this heat insulation panel 1 is used for said reinforcing member 4 as concrete combination shuttering, [the reinforcing member] It can play a role which reinforces the thermal insulation 2, and thrust in case the heat insulation panel 1 is pressed by prudence of placed concrete from the structure and material can fully be borne now. That is, the hollow part 7 of quadrangular shape is the plate material of hollow cross section structure which was divided by the bridgewall 8 and which were established by parallel, and this reinforcing member 4 has structure where the skin layers 9a and 9b which oppose a drawbar pull at inside-and-outside both sides were formed. What is necessary is to use vinyl-chloride system resin, polycarbonate, etc. and just to form as a material, using extruder, for example, when this reinforcing member 4 forms. This material of construction may be an example, and especially about this design, as long as concrete which is not limited to these and placed is the material which can fully bear thrust which presses the heat insulation panel 1, it may be what kind of thing.

[0023]

As the reinforcing member 4 for what has the thickness T1 of a 20-75-mm grade more specifically being used as the thermal insulation 2 made of said foaming synthetic resin, for example, and reinforcing to the thermal insulation 2 of this level, it is preferred to consider it as the thickness T2 of about 3-15 mm. This reinforcing member 4 may be point junction or line junction depending on the case, although extensively joined to the thermal insulation 2 by an adhesive bond etc. As an adhesive bond used here, it is preferred to, use an epoxy tree system adhesive bond or polyurethane resin adhesive for example.

[0024]

Next, with reference to drawing 2, an example of construction at the time of building a concrete wall with a heat insulation panel is explained using the heat insulation panel 1 concerning this example.

Drawing 2 explains a case where the heat insulation panel 1 is constructed to the indoor side of a wall of a building. First, the external shuttering 21 is allocated, and the heat

insulation panel 1 which has the thermal insulation 2, the drainage member 3, and the reinforcing member 4 is allocated as concrete combination shuttering so that an opposite peak may be carried out to this external shuttering 21.
[0025]
Subsequently, between the external shuttering 21 and the heat insulation panels 1 is maintained to a prescribed interval with the form tie 22, and the stiffener 23, and TATEBATA 24 and YOKOBATA 25 are allocated in the outside of the external shuttering 21 and the heat insulation panel 1, and it fixes with the clamp 26. Now, the concrete 27 is placed between the external shuttering 21 and the heat insulation panel 1, and this builds a concrete wall with a heat insulation panel.
[0026]
Since the drainage member 3 is formed here by this example at the heat insulation panel 1 of shuttering combination, While holding a state with fresh concrete, from the discharge slot 5 of the heat insulation panel 1 which has the water penetration engine performance, equally, can make redundant water in concrete discharge automatically, and by this, Since it is hard to produce a partial loss of area by remains air bubbles, a water cement ratio of a concrete layer part decreases and a deep precise pasted layer is formed near the surface, Concrete in which neither carbon dioxide gas nor salt can permeate easily from the exterior can be made, protection engine performance of an internal reinforcement can be improved, and durable performance of a concrete wall can be improved.
[0027]
Although the placed concrete 27 presses the heat insulation panel 1 as concrete combination shuttering, this thrust tends to bulge the stiffener 23 and a shuttering combination heat insulation panel which is not supported by TATEBATA 24 and YOKOBATA 25 in a method of outside. Therefore, in the shuttering combination heat insulation panel 1, a portion which is not supported by stiffener 23 grade will bulge in a method of outside, and, so to speak, a portion supported by stiffener 23 grade will be displaced to an inner direction.
[0028]
However, since the thermal insulation 2 is supported [this example] by the reinforcing member 4, when the shuttering combination heat insulation panel 1 tends to bulge in a method of outside. When resisting so that the skin layer 9a and the bridgewall 8 of a method of the outside in the reinforcing member 4 may prevent swelling, and denting in an inner direction, the skin layer 9b and the bridgewall 8 of an inner direction oppose this. And since it will function as the hollow part 7 between both the skin layers 9a and 9b absorbing modification of each skin layers 9a and 9b, a field by the side of the interior of a room of the reinforcing member 4 can be made into a still smoother field. As a result, after hardening of concrete, and in the shuttering combination heat insulation panel 1 side, a finishing material can be promptly attached by making the reinforcing member 4 into an inner package base sheet, and construction becomes simple.
[0029]
Thus, after building a concrete wall with a heat insulation panel, remove the external shuttering 21, the form tie 22, the clamp 26, etc., but. Since the heat insulation panel 1 is making internal shuttering serve a double purpose, installation and removal of one shuttering can become unnecessary, a construction process can be simplified, and a concrete wall with a heat insulation panel can be built easily. As a result, though both the

above-mentioned water permeable form construction method and a construction method using a shuttering combination heat insulation panel can be utilized, and it is durable and construction is simple, a concrete wall with a heat insulation panel can be provided.
[0030]
By an insulating function of the hollow part 7, the reinforcing member 4 after building a concrete wall with a heat insulation panel will make an insulating function by the thermal insulation 2 much more efficient, and will demonstrate outstanding insulation properties.
[0031]
[thus a built concrete wall with a heat insulation panel] Since the drainage member 3 was formed in the concrete side of the shuttering combination heat insulation panel 1 and the reinforcing member 4 has pasted the anti-concrete side, to thrust received from fresh concrete, it becomes what has confrontation nature extremely, and becomes in intensity and strong.
[0032]
[thus the heat insulation panel 1 which joined the reinforcing member 4 to the thermal insulation 2] Since the machined surface is smooth, it is not necessary to make a mortar dumpling adhere to the reinforcing member 4 with what is called a GL construction method, to attach a gypsum wallboard behind, and to make a smooth field, an inner package base sheet can be attached promptly, and construction becomes very easy.
[0033]
As for this design, it is needless to say not limited to a work example mentioned above and to be able to change variously. Especially, of course, it is not limited to a matter it was presupposed that is not limited into a Description at all.
[0034]
[Effect of the Device]
As stated above, since it is finished in a smooth field according to the shuttering combination heat insulation panel with the water penetration engine performance of this design, an inner package base sheet can be attached promptly and construction becomes very easy. Both a water permeable form construction method and the construction method using a shuttering combination heat insulation panel can be utilized, and it is durable, and also construction becomes easy, and the concrete wall excellent in high quality insulation properties can be built.